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IS 8914 (1988): Quality tolerances for water for vitreous enamel industry [CHD 13: Water Quality for Industrial Purposes]

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*Indian Standard*

**QUALITY TOLERANCES FOR WATER FOR  
VITREOUS ENAMEL INDUSTRY**

( *First Revision* )

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*Indian Standard*

# QUALITY TOLERANCES FOR WATER FOR VITREOUS ENAMEL INDUSTRY

*(First Revision)*

## 0. FOREWORD

**0.1** This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards on 29 January 1988, after the draft finalized by the Water Sectional Committee had been approved by the Chemical Division Council.

**0.2** Water is used in milling of vitreous enamels. Quality of water used in milling operations plays an important role as it helps to form a uniform suspension of the coating medium. If the water used is not of right quality, the impurities which are present in it are likely to coagulate the medium and hence hamper uniform coating. This standard is, accordingly, intended to provide guidelines for vitreous enamel industry in judging the suitability of a particular supply of water so that corrective treatment may be given to achieve the desired results.

**0.3** This standard was first published in 1978 and considerable assistance was taken from ASTM: C:

375-1967 'Standard classification of water used in milling of porcelain enamel', published by the American Society for Testing and Materials. This standard was reviewed and the Committee felt that it may be revised. The test for  $\text{pH}$  is to be done first to decide the acceptability or otherwise of the water. Hence, a test for  $\text{pH}$  has been prescribed as the first requirement under 3. The test for corrosivity has also been modified in this revision.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

\*Rules for rounding off numerical values (*revised*).

## 1. SCOPE

**1.1** This standard prescribes the quality tolerances for water suitable for vitreous enamel industry.

## 2. TERMINOLOGY

**2.1** For the purpose of this standard, the definitions given in IS : 7022 (Part 1)-1973\* and IS : 7022 (Part 2)-1979† shall apply.

## 3. TOLERANCES

**3.1 pH Value** — The  $\text{pH}$  of water shall be 6.5 to 7.6 when tested as prescribed in IS : 3025-(Part 11)-1984‡.

\*Glossary of terms relating to water, sewage and industrial effluents, Part 1.

†Glossary of terms relating to water, sewage and industrial effluents, Part 2.

‡Methods of sampling and test (physical and chemical) for water and wastewater: Part 11  $\text{pH}$ .

**3.2 Corrosivity** — The water shall be non-corrosive when tested as prescribed in Appendix A.

**3.3** The water shall also comply with the tolerances prescribed in Table 1 when tested according to the Indian Standards referred in col 4 of the table.

## 4. SAMPLING

**4.1** Representative test samples of water shall be drawn as prescribed in IS : 3025 (Part 1)-1986\*.

\*Methods of sampling and test (physical and chemical) for water and wastewater: Part 1 Sampling.

**TABLE 1 TOLERANCES FOR WATER FOR VITREOUS ENAMEL INDUSTRY**  
*( Clause 3.3 )*

SL No.	CHARACTERISTIC	TOLERANCE	METHOD OF TEST, REF TO CLAUSE
(1)	(2)	(3)	(4)
i)	Calcium ( as Ca ), mg/l, Max	12	33 of IS : 3025-1964*
ii)	Magnesium ( as Mg ), mg/l, Max	2	34 " " "
iii)	Iron ( as Fe ), mg/l, Max	0·3	32 " " "
iv)	Manganese ( as Mn ), mg/l, Max	0·005	35 " " "
v)	Sulphate ( as SO <sub>4</sub> ), mg/l, Max	25	20 " " "
vi)	Chloride ( as Cl ), mg/l, Max	13	24 " " "
vii)	Total hardness ( as CaCO <sub>3</sub> ), mg/l, Max	39	IS : 3025 ( Part 21 )-1983†
viii)	Total dissolved solids, mg/l, Max	147	IS : 3025 ( Part 16 )-1984‡
ix)	Bicarbonate ( as HCO <sub>3</sub> ), mg/l, Max	117	44 of IS : 3025-1964*

\*Methods of sampling and test ( physical and chemical ) for water used in industry.

†Methods of sampling and test ( physical and chemical ) for water and wastewater: Part 21 Total hardness.

‡Methods of sampling and test ( physical and chemical ) for water and wastewater: Part 16 Filterable residue ( total solids dissolved and suspended ).

## A P P E N D I X A

*( Clause 3.2 )*

### TEST FOR CORROSION

#### A-0. GENERAL

**A-0.1** Increase in *pH* value after the water has been in contact with calcium carbonate is taken as a sign of corrosivity. According to the tolerance limits (*see 3.1*) the maximum *pH* value should not exceed 7·6. This means that water should not be alkaline. If the *pH* value of the sample as determined by the procedure given in **A-2.1** is lower than 7·6 but in the acidic range, it will not be advisable to wash the precipitated calcium carbonate thrice with this water as recommended in **A-1.1**. If this is done, loss of carbonate will result due to the evolution of carbon dioxide gas as a result of the action of acidic water on the carbonate. Hence the water to be used for washing the precipitated calcium carbonate should be demineralized water.

#### A-1. REAGENTS

**A-1.1 Precipitated Calcium Carbonate** — Place about 10 g of powdered material in a

250-ml glass stoppered bottle. Wash thrice with demineralized water by stirring, allowing to settle for several minutes and then pouring off the supernatant liquid while still turbid.

#### A-2. PROCEDURE

**A-2.1** Take the glass-stoppered bottle containing washed calcium carbonate fill it up with the sample and insert the stopper after allowing all gas bubbles ( if evolved ) to escape. Shake well to bring the powder in suspension throughout the bottle and open stopper, if necessary, if gas bubbles are formed and re-stopper and then set aside. Repeat shaking at frequent intervals for about 4 hours. Finally allow to stand overnight and the filter rapidly by decanting through a filter paper. Determine the *pH* value of the filtrate and report *pH* value to first decimal place.